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ABSTRACTS

Edited by David E. Zitarelli

The purpose of this department is to give sufficient information about the subject matter of each publication to enable users to decide whether to read it. It is our intention to cover all books, articles, and other materials in the field.

Books for abstracting and eventual review should be sent to this department. Materials should be sent to Prof. David E. Zitarelli, Department of Mathematics, Temple University, Philadelphia, PA 19122, U.S.A. (E-mail: ZIT@VM.TEMPLE.EDU)

Readers are invited to send reprints, autoabstracts, corrections, additions, and notices of publications that have been overlooked. Be sure to include complete bibliographic information, as well as transliteration and translation for non-European languages. We need volunteers willing to cover one or more journals for this department.

In order to facilitate reference and indexing, entries are given abstract numbers which appear at the end following the symbol #. A triple numbering system is used: the first number indicates the volume, the second the issue number, and the third the sequential number within that issue. For example, the abstracts for Volume 20, Number 1, are numbered: 20.1.1, 20.1.2, 20.1.3, etc.

For reviews and abstracts published in Volumes 1 through 13 there are an *author index* in Volume 13, Number 4, and a *subject index* in Volume 14, Number 1.

The initials in parentheses at the end of an entry indicate the abstractor. In this issue there are abstracts by Joe Albree (Montgomery, AL), Gerhard Betsch (Tübingen), Timothy B. Carroll (Ypsilanti, MI), John G. Fauvel (Milton Keynes), Victor J. Katz (Washington), Elena A. Marchisotto (Northridge, CA), Vincent McGarry (Austin, TX), Peter Ross (Santa Clara, CA), Gary S. Stoudt (Indiana, PA), and David E. Zitarelli.

Calinger, Ronald, ed. *Vita Mathematica: Historical Research and Integration with Teaching*, Washington, DC: Mathematical Association of America, 1996, xii + 356 pp., paperbound, $34.95. A collection of papers on the history of mathematics and its integration with the teaching of mathematics. (DEZ) #25.1.37

Abraham, George. *See* #26.1.93.

Alexander, Daniel S. An Episodic History of Complex Dynamics from Schröder to Fatou and Julia, in Umberto Bottazzini, ed., *Studies in the History of Modern Mathematics, II*, Palermo: Circolo Matematico di Palermo, 1996, pp. 57–83. A revised version of a paper the author gave at the Sixth Annual Göttingen Workshop (July 1995) on the History of Modern Mathematics. See *Mathematical Reviews* **96g**:01020, **97m**:01005, and **98d**:01027. (TBC) #26.1.1

Angelelli Ignacio. *See* #26.1.44.

Archibald, Tom. German Mathematics in France: The Role of Charles Hermite, *Universitas* **11** (1998). The dominance of German pure-mathematical values in France of the 1870s–1880s can be linked to the political opinions and cultural values of Charles Hermite (1822–1901). [The electronic journal *Universitas*, the newsletter of the International Centre for the History of Universities and Science at the University of Bologna, can be accessed at http://186.cis.unibo.it/] (JGF) #26.1.2

Ariew, Roger. *See* #26.1.45.

Note. The first abstract is reprinted from an earlier volume because the papers in it are abstracted separately in this volume.

0315-0860/99 $30.00

Arora, Virendra. Baudhāyana's Contributions to Vedic Geometry, *Gaṇita-Bhāratī* **18** (1996), 9–13. Outlines the mathematical content of the *Baudhāyanaśulbasūtra*, a 6th-century BC manual for constructing Vedic altars. (EAM) #26.1.3

Arps, Leslie H., *et al.* *Operations Analysis in the Eighth Air Force, 1942–1945: Four Contemporary Accounts*, Institute for Operations Research & Management Sciences, 1997, vi + 296 pp., paperbound, $20. Four essays, written in 1945 but never published before, on the experiences of operations research pioneers. (DEZ) #26.1.4

Ashworth, William J. Labour Harder Than Thrashing: John Flamsteed, Property and Intellectual Labour in Nineteenth-Century England, in #26.1.186, pp. 199–216. The Flamsteed-vs-Newton controversy that flared up again in the aftermath of Baily's revisionist *Account of the Rev John Flamsteed* (1835) illuminates notions of accountability, methodology, and discovery which were being vigorously negotiated at the time, as well as moral characteristics of great men of science. In effect, the book was about the organization of scientific labor in British astronomy of the 1830s–1840s as much as it was about Flamsteed. (JGF) #26.1.5

Atiyah, Michael F. John Arthur Todd (1908–1994), *Bulletin of the London Mathematical Society* **30** (1998), 305–316. Influenced by H. F. Baker at Cambridge and later by Solomon Lefschetz at Princeton, Todd was "a transitional figure in twentieth century geometry." "[He] spent most of his working life on classical projective geometry and associated group theory," but his most important contributions were to modern algebraic geometry. There is a photo and a list of his 80 papers and one book. (JA) #26.1.6

Atiyah, Michael F. *See also* #26.1.130.

Aubin, David. The Withering Immortality of Nicolas Bourbaki: A Cultural Connector at the Confluence of Mathematics, Structuralism, and the Oulipo in France, *Science in Context* **10** (1997), 297–342. Paradoxically, links between Bourbaki and wider cultural movements such as structuralism can be clearly established despite their advocacy of the isolation of pure mathematics from society and science. The role of Bourbaki is best seen as that of cultural connector. (JGF) #26.1.7

Balcar, Bohuslav, and Simon, Petr. Miroslav Katětov (1918–1995), *Mathematica Bohemica* **122** (1997), 97–111. A description of the life and contributions to mathematics, with emphasis on topology, of Katětov. Includes a full list of papers. See the review by Roman Duda in *Mathematical Reviews* **98c**:01038. (GSS) #26.1.8

Barbin, Evelyne. Can Proof be Taught? in Evelyne Barbin and Régine Douady, eds., *Teaching Mathematics: The Relationship between Knowledge, Curriculum and Practice*, Metz: Topiques Éditions, 1996, pp. 195–210. The teaching of proof has an important place in mathematics. To analyze this activity, proofs by Euclid, Arnauld, and Clairaut are compared for the angle-sum of a triangle. (JGF) #26.1.9

Barbin, Evelyne. The Role of Problems in the History and Teaching of Mathematics, in #25.1.37, pp. 17–25. Introducing history of mathematics to future teachers transforms the practice of teaching mathematics, through changing the epistemological concepts of mathematics, in particular, by emphasizing the construction of knowledge out of the activity of problem solving. This is seen in the examples of the concept of angle and the concept of curve. (JGF) #26.1.10

Barker, Peter. *See* #26.1.45.

Bartolini Bussi, Maria G. Drawing Instruments: Theories and Practices from History to Didactics, in *Documenta Mathematica* (*Journal der Deutschen Mathematiker-Vereinigung*), Extra Volume ICM III, 1998, pp. 735–746. The printed version of the author's invited 45-min lecture at the 1998 International Congress of Mathematicians in Berlin. An exploration of linkages and other drawing instruments to show that secondary and university students can relive the making of theories in a paradigmatic case of the historical phenomenology of geometry, generate "new" (for the learners) pieces of mathematical knowledge, and assimilate strategies for exploration and representative tools. (DEZ) #26.1.11

Beckenstein, Edward. *See* #26.1.127.

Begehr, Heinrich. *See* #26.1.15.

Betsch, Gerhard. Kepler's Theory of Highly Symmetric Plane Figures and Solids, in Jaroslav Folta, ed., *Mysterium Cosmographicum 1596–1996*, Prague: National Technical Museum in Prague, 1998, pp. 110–125. An outline of Kepler's theory of regular plane figures and solids, which, according to J. V. Field, is a key aspect of his "geometrical cosmology." Special consideration is given to the cosmological system of the *Mysterium Cosmographicum,* Kepler's investigation of semi-regular polyhedra, the famous Kepler conjecture on the maximum density of packings with congruent spheres, and the two star-polyhedra discovered by Kepler. (GB) #26.1.12

Bollobás, Béla. To Prove and Conjecture: Paul Erdős and His Mathematics, *American Mathematical Monthly* **105** (1998), 209–237. An admiring account of the life and work of Paul Erdős, described as "one of the giants of 20th century mathematics" (p. 209). Erdős's contributions are divided into three areas: problems, elementary methods, and probabilistic methods. There are numerous photographs. (DEZ) #26.1.13

Boothin, A. D. *See* #26.1.112.

Borrajo, Daniel. *See* #26.1.42.

Boswell, Terry. A Note on John Venn As a Collector and Bibliographer of Works on Logic, *History and Philosophy of Logic* **16** (1995), 121–125. A characterization of the contents and origin of the books on logic donated by John Venn to the Cambridge University Library, with their relation to the bibliography in his treatise on symbolic logic. (DEZ) #26.1.14

Bottazzini, Umberto, and Gray, Jeremy J. Complex Function Theory from Zurich (1897) to Zurich (1932), in Umberto Bottazzini, ed., *Studies in the History of Modern Mathematics, II,* Palermo: Circolo Matematico di Palermo, 1996, pp. 85–111. Highlights of the development of complex function theory between the two ICMs of 1897 and 1932 in Zurich. In addition to mathematics, some personal and political background is commented on. See *Mathematical Reviews* **97m**:01005, the review by Heinrich Begehr in *Mathematical Reviews* **98d**:01028, and #22.4.29. (TBC) #26.1.15

Bottineau-Fuchs, Yves. Abraham Bosse "interprète" de Girard Desargues, in Jean Dhombres and J. Sakarovitch, eds., *Desargues en son temps*, Paris: Blanchard, 1994, pp. 371–388. The author argues that through the complete printed work of Abraham Bosse (1602?–1676), Bosse came to the defense of Girard Desargues. See *Mathematical Reviews* **98b**:01001 and the review by Victor V. Pambuccian in *Mathematical Reviews* **98d**:01014. (TBC) #26.1.16

Brosche, Peter, and Odenkirchen, Michael. C. F. Gauß und die Einführung der Methode der kleinsten Quadrate, *Gauss-Gesellschaft e. V. Göttingen. Mitteilungen* **33** (1996), 11–20. This paper concerns C. F. Gauss and the introduction of the method of least squares. The authors show that the value Gauss derived for the flattening of the earth is not in accordance with the values obtained under various assumptions using a modern calculation involving least squares. They contrast this with Legendre's value which is very close to the expected value, suggesting that while Gauss was in possession of the idea of least squares, he was still devising iterative procedures for the combinations of observations. See the review by Craig G. Fraser in *Mathematical Reviews* **98c**:01021. (GSS) #26.1.17

Burde, G. *See* #26.1.175.

Burnett, Charles. *See* #26.1.57.

Caldwell, John. *See* #26.1.74.

Chandler, Bruce. Longitude in the Context of Mathematics, in W. J. H. Andrewes, ed., *The Quest for Longitude,* Cambridge: Harvard Collection of Historical Scientific Instruments, 1996, pp. 34–42. Contributions of Huygens and Newton were essential, but also inadequate, to solving the problem of finding longitude at sea. In the next century, crucial advances in lunar theory and lunar tables were made by Euler and Mayer, who were motivated by the internal dynamic of mathematics rather than the longitude prize. (JGF) #26.1.18

Chandrasekharan, K. The Autobiography of Laurent Schwartz, *Notices of the American Mathematical Society* **45** (1998), 1141–1147. A summary and review of the autobiography of the Fields Medalist, Laurent Schwartz, that discusses his work, particularly the theory of distributions, completed under a World War II alias, and his social activism. (DEZ) #26.1.19

Charbonneau, Louis. From Euclid to Descartes: Algebra and its Relation to Geometry, in Nadine Bednarz, Carolyn Kieran, and Lesley Lee, eds., *Approaches to Algebra*, Dordrecht: Kluwer Academic Publishers, 1996, pp. 15–37. Beginning with Mahoney's ideas on the notion of "algebraic thinking," the development of this concept is traced through the related ideas of analysis, measure, and proportion. See the review by C. R. Fletcher in *Mathematical Reviews* **97h**:01002. (JA) #26.1.20

Charbonneau, Louis, and Lefebvre, Jacques. Placement and Function of Problems in Algebraic Treatises from Diophantus to Viète, in Nadine Bednarz, Carolyn Kieran, and Lesley Lee, eds., *Approaches to Algebra*, Dordrecht: Kluwer Academic Publishers, 1996, pp. 155–165. Works of Diophantus, al-Khwārizmī, Cardano, and Viète are cited to illustrate how attitudes toward problems changed over time and through different cultures. See the review by C. R. Fletcher in *Mathematical Reviews* **97h**:01003. (JA) #26.1.21

Chemla, Karine. History of Mathematics in China: A Factor in World History and a Source for New Questions, in *Documenta Mathematica* (*Journal der Deutschen Mathematiker-Vereinigung*), Extra Volume ICM III, 1998, pp. 789–798. The printed version of the author's invited 45-min lecture at the 1998 International Congress of Mathematicians in Berlin. Chemla presents recent observations on *The Nine Chapters on Mathematical Procedures* and its commentaries, then discusses some mathematical results obtained in ancient China that can be embedded in a world history of mathematics. (DEZ) #26.1.22

Chemla, Karine. What Is at Stake in Mathematical Proofs from Third-Century China? *Science in Context* **10** (1997), 227–251. Liu Hui's third-century commentary on *The Nine Chapters* both establishes why a statement is correct and fulfills algorithmic ends. Interpreting the text cannot be dissociated from describing the practice of mathematical proof to which it bears witness. (JGF) #26.1.23

Christ, Michael; Kenig, Carlos E.; Sadosky, Cora; and Weiss, Guido. Alberto Pedro Calderón (1920–1998), *Notices of the American Mathematical Society* **45** (1998), 1148–1153. A brief biography of the Argentinean analyst, A. P. Calderón, followed by four memorials describing his life and work, with a list of his 27 Ph.D. students. Together, Calderón and Antoni Zygmund created "the Chicago school of analysis." (DEZ) #26.1.24

Cobos Bueno, José. A Mathematician Out of His Time: Ventura Reyes Prosper, *Extracta Mathematicae* **11** (1996), 306–314. Reyes Prosper (1863–1922) was one of the men who introduced modern mathematics into Spain. His life and mathematics are discussed. See the review by D. J. Struik in *Mathematical Reviews* **98c**:01039. (GSS) #26.1.25

Collins, D. J. John Leslie Britton (1927–1994), *Bulletin of the London Mathematical Society* **29** (1997), 617–621. A student of first Hanna and then Bernhard Neumann in Manchester, Britton contributed to combinatorial group theory and was the editor of the *Collected Works: Pure Mathematics* of Alan M. Turing. There is a photo and a list of his 11 publications. (JA) #26.1.26

Cooke, Roger L. Book Review, *American Mathematical Monthly* **105** (1998), 284–288. A review of L. T. Rigatelli, *Evariste Galois, 1811–1832* that disputes the "martyr" scenario painted in the book. See also #24.2.153. (DEZ) #26.1.27

Cooke, Roger L. *See also* #26.1.110.

Corry, Leo. Hermann Minkowski and the Postulate of Relativity, *Archive for History of Exact Sciences* **51** (1997), 273–314. From 1907 Minkowski erected the new theory of relativity on what was to become its standard mathematical formulation, adopted by Einstein, and Hilbert presented his vision of general relativity equations a few days before Einstein, in 1915. Understanding Minkowski's work is helped by noting its links with that of Hilbert. (JGF) #26.1.28

Corry, Leo. The Origins of Eternal Truth in Modern Mathematics: Hilbert to Bourbaki and Beyond, *Science in Context* **10** (1997), 253–296. Bourbaki's structural conception of mathematics owed little to their conception of mathematical structures, and their presentation of the eternal character of mathematical truth as deriving from Hilbert's mathematical heritage sits uneasily with Hilbert's own conception of the axiomatic method. (JGF) #26.1.29

Cuomo, Serafina. Niccolò Tartaglia, Mathematics, Ballistics and the Power of Possession of Knowledge, *Endeavour* **22** (1998), 31–35. Tartaglia's (1500–1557) range of pursuits illustrates the complex interplay between mathematics and war in this period, where artillery expertise was located away from the traditional concept of a military leader with his classical humanist education. (JGF) #26.1.30

Dadić, Zarko. The Earliest Geometrical Works of Marin Getaldić, in #25.1.37, pp. 115–123. The Croatian mathematician, Marin Getaldić (1568–1626), worked on restoring treatises by Apollonius, influenced by Viète. (JGF) #26.1.31

D'Ambrosio, Ubiratan. Looking Back, *Bulletin CSHPM/SCHPM* **22** (1998), 4–8, 24. The author reflects on his career and his philosophy. (DEZ) #26.1.32

Dampier, Michael. *The Mathematical Gazette*: A Brief History, *Mathematical Gazette* **80** (1996), 5–12. The founding of *The Mathematical Gazette* in 1894 marked a decisive stage in the movement for reform of mathematics teaching in the UK from the 1870s. Major influences in the early years were the efforts of successive editors. (JGF) #26.1.33

Dās, Sachidānand. Multiplication and Divisibility of Numbers—The Sūtra Way, *Indian Journal of History of Sciences* **31** (1996), 339–358. The author uses two equations (*sūtras*) and two subequations (*upasūtras*) from the book *Vedic Mathematics* of Swāmi Bhāratī Kṛṣṇa Tīrthajī to illustrate alternative algorithms for multiplication and division of numbers. See the review by S. A. Paramhans in *Mathematical Reviews* **98h**:01007. (JA) #26.1.34

Dathe, Uwe. Gottlob Frege und Rudolf Eucken—Gesprächspartner in der Herausbildungsphase der modernen Logik, *History and Philosophy of Logic* **16** (1995), 245–255. Examines the influence of R. Eucken on G. Frege's philosophical development between 1879 and 1885. (EAM) #26.1.35

Dauben, Joseph W. Marx, Mao and Mathematics: The Politics of Infinitesimals, in *Documenta Mathematica* (*Journal der Deutschen Mathematiker-Vereinigung*), Extra Volume ICM III, 1998, pp. 799–809. The printed version of the author's invited 45-min lecture at the 1998 International Congress of Mathematicians in Berlin. The author links the important role that the study of nonstandard analysis plays in China today to the discovery during the Cultural Revolution (1966–1976) of Karl Marx's work on calculus during the 1860s. Some Chinese mathematicians used technical tools developed by Abraham Robinson only a few years earlier. (DEZ) #26.1.36

Davenport, Anne A. The Catholics, the Cathars, and the Concept of Infinity in the Thirteenth Century, *Isis* **88** (1997), 263–295. Two 13th-century English theologians, Alexander Nequam and Richard Fishacre, used mathematical arguments to defend the consistency of divine infinity. The struggle between Catholics and Cathars is a factor in the scientific character of scholastic theology at the time, which in turn provides a root of the modern notion of the infinite. (JGF) #26.1.37

Davis, A. E. L. Kepler's Unintentional Ellipse—A Celestial Detective Story, *Mathematical Gazette* **82** (1998), 37–43. Although Kepler was familiar with the work of Archimedes and Apollonius, he found the laws of planetary motion not through Greek advanced geometry, but purely by the basic methods and results of Euclid's *Elements*. (JGF) #26.1.38

Davis, Audrey B. *See* #26.1.163.

Deakin, Michael A. B. From Pappus to Today: The History of a Proof, *Mathematical Gazette* **74** (1990), 6–11. The theorem that base angles of an isosceles triangle are equal (*Elements* I.5, commonly known as *pons asinorum*) has had other proofs with pedagogical advantages, notably the direct proof attributed by Proclus to Pappus, with variants discussed by textbook writers including Legendre, Lacroix, Peirce, and Dodgson. (JGF) #26.1.39

Deakin, Michael A. B. Taking Mathematics to Ultima Thule: Horatio Scott Carslaw—His Life and Mathematics, *The Australian Mathematical Society Gazette* **24** (1997), 4–16. An outline of the life and mathematical work of the Australian mathematician, Horatio Scott Carslaw (1870–1954), whose broad range of interests included Fourier series, Laplace transforms, computation of tax scales, non-Euclidean geometry, and mathematics education. See the review by Willard Parker in *Mathematical Reviews* **98d**:01037. (TBC) #26.1.40

De Gandt, François. *Force and Geometry in Newton's Principia*, Princeton: Princeton Univ. Press, 1995, 296 pp., $49.50. See the review by Victor J. Katz in *The American Mathematical Monthly* **105** (1998), 386–392. The reviewer describes the book as a "detailed analysis of Newton's arguments from *De Motu* [and] a study of the notions of force and of the mathematical methods used by Newton's predecessors that may be the sources of some of Newton's ideas" (p. 389.) See also #25.1.205. (DEZ) #26.1.41

De Ledesma, Luis; Pérez, Aurora; Borrajo, Daniel; and Laita, Luis M. A Computational Approach to George Boole's Discovery of Mathematical Logic, *Artificial Intelligence* **91** (1997), 281–307. The paper is devoted to producing some sort of reasoning which leads from Boole's conception of logical operations, suitably designed as inputs, to his discovery of the fact that logic can be algebraized, in order to describe an expert system designed to be capable of reproducing a likely succession of mental operations of a scientist recognizing whether or not a "science" can be algebraized. See the review by Marcel Guillaume in *Mathematical Reviews* **98c**:01026. (GSS) #26.1.42

Dobrovol'skii, Viacheslav Alekseevich; Lokot', Natalia Vasilevna; and Strelcyn, Jean-Marie. Mikhail Nikolaevich Lagutinskii (1871–1915): Un Mathématicien Méconnu, *Historia Mathematica* **25** (1998), 245–264. A report on the life and work of the little-known Russian mathematician, M. N. Lagutinskii, who developed the Darboux method of solving systems of differential equations and developed their theory of integrability in finite terms. Lagutinskii's complete bibliography is supplied. (DEZ) #26.1.43

Dreben, Burton, and Kanamori, Akihiro. Hilbert and Set Theory, *Synthese* **110** (1997), 77–125. This paper contains nine sections (basis theorem; geometry; arithmetic; set theory; logic; metamathematics; continuum hypothesis; Gödel; and appendix) comprising a general exposition of the "ramifications and extensions" of Hilbert's work on set theory over a quarter of a century. See the review by Ignacio Angelelli in *Mathematical Reviews* **98h**:01019. (JA) #26.1.44

Duda, Roman. *See* #26.1.8.

Duhem, Pierre. *Essays in the History and Philosophy of Science*, trans. Roger Ariew and Peter Barker, Indianapolis: Hackett Publishing Co., 1996, xx + 290 pp., hardbound, $39.95, paperbound, $19.95. Twelve essays covering the career of P. Duhem (1861–1916) as a historian and philosopher of science. Included is the evolution of the "continuity thesis," an essay on the continuity between medieval and early modern science, a critical study of Poincaré's *Science and Hypothesis*, and an illustration of Duhem's theses concerning the relations between physics and metaphysics. See the review by Pierre Kerszberg in *Mathematical Reviews* **98c**:01048. (GSS) #26.1.45

Echegaray, José. *José Echegaray* [in Spanish], Madrid: Fundación Banco Exterior, 1990, 499 pp. A biography of the Spanish engineer, José Echegaray (1832–1916), by J. M. Sánchez Ron, together with the reprints of 12 papers and 4 book chapters by Echegaray and a reprint of Francisco Vera's *Los historiadores de la matemática española* (1935). In *Mathematical Reviews* **98d**:01042 the reviewer, Mariano Hormigón, states that the biographical material is based solely on secondary sources. (TBC) #26.1.46

Eperson, D. B. Lewis Carroll—Mathematician, *Mathematical Gazette* **80** (1996), 199–203. C. L. Dodgson may have been an early pioneer in the use of recreational mathematics as an educational instrument, although his experiences of teaching pupils of St. Aldate's School, Oxford, in 1856 were disappointing once the novelty had worn off. (JGF) #26.1.47

Epple, Moritz. Topology, Matter, and Space. I. Topological Notions in 19th-Century Natural Philosophy, *Archive for History of Exact Sciences* **52** (1998), 297–392. The need for topological tools developed through complicated interactions between different domains of science. A key strand in the emergence of topology as a discipline was that such issues arose in the context of a dynamical theory of physical phenomena, studied by British physicists (Maxwell, Tait) during the last third of the 19th century. Before the disciplinary threshold was reached even pure mathematicians found it hard to understand the topological tools introduced by Riemann, Poincaré, Betti, and others. (JGF) #26.1.48

Erlichson, Herman. Evidence That Newton Used the Calculus to Discover Some of the Propositions in his *Principia*, *Centaurus* **39** (1997), 253–266. Presents new evidence in support of Newton's use of calculus in the *Principia*. See the review by Niccolò Guicciardini in *Mathematical Reviews* **98e**:01011. (EAM) #26.1.49

Erlichson, Herman. Galileo's Work on Swiftest Descent from a Circle and How He Almost Proved the Circle Itself Was the Minimum Time Path, *The American Mathematical Monthly* **105** (1998), 338–347. A study of Proposition 36 and its Scholium from Galileo's *Two New Sciences*. The paper ends with a challenge to prove Galileo's unproven assumption. (DEZ) #26.1.50

Fauvel, John. Empowerment through Modelling: The Abolition of the Slave Trade, in #25.1.37, pp. 125–130. An example of the use of a historical artifact—a diagram from Thomas Clarkson's *History of the ... Abolition of the Africa Slave-Trade* (1808)—in order to help students to think and learn about graphical modeling techniques. (JGF) #26.1.51

Feingold, Mordechai. Astronomy and Strife: John Flamsteed and the Royal Society, in #26.1.186, pp. 31–48. An association which started with 22-year-old John Flamsteed writing to the president of the Royal Society in 1669 for patronage ended with the Astronomer Royal being removed from the Royal Society in 1709 due to the deterioration of his relations with the president. (JGF) #26.1.52

Fenster, Della Dumbaugh. Leonard Eugene Dickson and His Work in the Arithmetics of Algebras, *Archive for History of Exact Sciences* **52** (1998), 119–159. L. E. Dickson gave a plenary address on the arithmetics of algebras to the 1920 Strasbourg ICM. Here and later his mathematical researches were supported by his rhetorical strength and his views of the subject's development. (JGF) #26.1.53

Ferraro, Giovanni. Some Aspects of Euler's Theory of Series: *Inexplicable* Functions and the Euler–Maclaurin Summation Formula, *Historia Mathematica* **25** (1998), 290–317. A detailed examination of Euler's thought on certain inexplicable functions that arise in the study of series from 1730 to 1755. (DEZ) #26.1.54

Ferreirós Domínguez, José. Notes on Type, Set and Logicism, 1930–1950, *Theoria* (*San Sebastián*) **12** (1997), 91–124. A survey of ideas about logicism, type theory, and various axiomatic set theories from 1930 to 1950. See the review by E. Mendelson in *Mathematical Reviews* **98d**:01033. (TBC) #26.1.55

Field, J. V. The Infinitely Great and the Infinitely Small in the Work of Girard Desargues, in Jean Dhombres and J. Sakarovitch, ed., *Desargues en son temps*, Paris: Blanchard, 1994, pp. 219–230. Explores Desargues's use of indivisibles, tracing the influence of Cavalieri and Kepler, among others, in the strategies he chose. See the review by William R. Shea in *Mathematical Reviews* **98e**:01012. (EAM) #26.1.56

Fletcher, C. R. *See* #26.1.21 and #26.1.Charbonneau.

Folkerts, Menso, and Kunitzsch, Paul, eds. *Die älteste lateinische Schrift über das indische Rechnen nach al-Hwārizmī*, Munich: Bayerische Akademie der Wissenschaften, 1997, viii+ 231 pp. The first author discovered a complete text of *Dixit Algorizmi*, only the second known Latin manuscript of al-Khwārizmī's work*On Indian Calculation*. It is reproduced here with the other one, along with commentary and a summary of the chapters. See the review by Charles Burnett in *Isis* **89** (1998), 334–335. (DEZ) #26.1.57

Ford, Charles. The Influence of P. A. Florensky on N. N. Luzin, *Historia Mathematica* **25** (1998), 332–339. The founder of the Moscow school of the theory of functions, N. N. Luzin, experienced a spiritual crisis in 1905 that lasted for four years. His correspondence with P. A. Florensky reveals the latter's profound influence enabling Luzin to end the crisis and launch his career as a mathematician. (DEZ) #26.1.58

Forfar, D. O. What Became of the Senior Wranglers? *Mathematical Spectrum* **29** (1996/7), 1–4. A survey of the subsequent careers of senior wranglers during the 157 years (1753–1909) in which the results of Cambridge's mathematical tripos were published in order of merit. (JGF) #26.1.59

Fraser, Craig G. *See* #26.1.17.

French, Doug. New Sins for Old Sines, *Mathematics in School* **26** (1997), 23–25. Looking at how material was presented and taught in Thomas Keith's *Introduction to Trigonometry* of 1832 (first edition c. 1800) helps us reflect upon the value for teachers of looking at old textbooks. (JGF) #26.1.60

Ganitanand. Some Mathematical Lapses from Āryabhata to Ramanujan, *Gaṇita-Bhāratī* **18** (1996), 31–47. Examples of various "errors" made by mathematicians throughout history. See the review by Victor J. Katz in *Mathematical Reviews* **98e**:01002. (DEZ) #26.1.61

Garibaldi, A. C. *See* #26.1.81.

Gerdes, Paulus. *Femmes et géométrie en Afrique australe*, Paris: Éditions L'Harmattan, 1996, 219 pp. Originally published in 1995 in Mozambique, this book combines the study of geometry with that of the visual arts, presenting an important challenge and stimulant to the future of mathematics education in Africa, as reflected in the work and crafts of women in southern Africa. See the review by J. S. Joel in *Mathematical Reviews* **98e**:01004. (DEZ) #26.1.62

Gerdes, Paulus. *Women, Art and Geometry in Southern Africa*, Lawrenceville, NJ: Africa World Press, 1998. The author's translation of #26.1.62 into English. (DEZ) #26.1.63

Gillispie, Charles C. Eloge: Charles Scribner, Jr., 12 July 1921–11 November 1995, *Isis* **88** (1997), 302–303. An obituary of the publisher, Charles Scribner, "most of whose associates were mathematicians and exact scientists." The author reveals his work with Charlie Scribner in the publication of the *Dictionary of Scientific Biography*, which was initially projected to be four volumes but which turned out to be 16 volumes plus two companion volumes. (DEZ) #26.1.64

Glas, Eduard. *See* #26.1.135.

Gnedenko, B. V. On the Past and the Future, *Theory of Probability and Mathematical Statistics* **49** (1994), 1–15. B. V. Gnedenko reminisces about the first years after World War II and comments on the deplorable state of science and education after the breakup of the USSR. See the review by U. Krengel in *Mathematical Reviews* **98d**:01034. (TBC) #26.1.65

Gowing, Ronald. Pierre Varignon and the Measurement of Time, *Revue d'histoire des sciences* **50** (1997), 361–368. Pierre Varignon (1654–1722) explored the correct shape for the fusee of a spring-driven clock through investigating the way in which the tension in a coiled spring varies as the spring uncoils, an early (1690s) exercise in the newly discovered calculus. (JGF) #26.1.66

Grabiner, Judith V. The Calculus As Algebra, the Calculus As Geometry: Lagrange, Maclaurin, and Their Legacy, in #25.1.37, pp. 131–143. The work of two very different 18th-century mathematicians, Maclaurin and Lagrange, may be contrasted to show students the different modes of creative mathematical thought. (JGF) #26.1.67

Grattan-Guinness, Ivor. "Ad quadratum" and Beyond: Right-Angled Triangles Generate All Rectangles with Sides in Integral Ratio, *Zentralblatt für Didaktik der Mathematik* **95** (1995), 138–139. A little-known but remarkably simple and beautiful theorem may be associated with the history of architecture and with Masonic symbolism, but the history remains to be explored. (JGF) #26.1.68

Grattan-Guinness, Ivor. Some Neglected Niches in the Understanding and Teaching of Numbers and Number Systems, *Zentralblatt für Didaktik der Mathematik* **98** (1998), 12–18. Historical examples in the field of number, selected for their possible use in teaching at school or college level, with pedagogic commentary: including fractions and ratios, integers with properties, algorist vs abacist approaches to calculation, and zero. (JGF) #26.1.69

Gray, Jeremy J. The Riemann–Roch Theorem and Geometry, 1854–1914, in *Documenta Mathematica* (*Journal der Deutschen Mathematiker-Vereinigung*), Extra Volume ICM III, 1998, pp. 811–822. The printed version of the author's invited 45-min lecture at the 1998 International Congress of Mathematicians in Berlin. It examines the history of the Riemann–Roch theorem from its discovery by Riemann and Roch in the 1850s through Brill and Noether to its use by Castelnuovo and Enriques from 1890 to 1914. Gray's study offers illustrative examples of how a result stays alive in mathematics by admitting many interpretations. (DEZ) #26.1.70

Gray, Jeremy. *See also* #26.1.15 and #26.1.100.

Green, Judy; LaDuke, Jeanne; Mac Lane, Saunders; and Merzbach, Uta. Mina Spiegel Rees (1902-1997), *Notices of the American Mathematical Society* **45** (1998), 866–873. Three tributes to the life and work of the American mathematician, Mina Rees, "for eminence in the application of public policy to the welfare of mathematics" (p. 872). (DEZ) #26.1.71

Greenberg, John L. *The Problem of the Earth's Shape from Newton to Clairaut: The Rise of Mathematical Science in Eighteenth-Century Paris and the Fall of "Normal" Science*, Cambridge/New York: Cambridge Univ.

Press, 1995, xvii + 781 pp., $35. See the review by Albert Lewis in *Historia Mathematica* **25** (1998), 320–325, who calls the book a "long and densely written treatise on the history of mechanics and mathematics" (p. 321). See also #24.2.80. (DEZ) #26.1.72

Grier, David Alan. Gertrude Blanch of the Mathematical Tables Project, *Annals of the History of Computing* **19** (4) (1997), 18–27. The Mathematical Tables Project, with Gertrude Blanch (1897–1996) as technical director, was set up in 1938 as a New York work relief project, and was soon the largest computing organization in the world. The architecture of early electronic computers closely parallels the structure of human computing organizations such as the MTP. Blanch's opportunities and post-war work suffered from political and gender bias. (JGF) #26.1.74

Grodzki, Zdzislaw. *See* #26.1.90.

Guicciardini, Niccolò. *See* #26.1.49 and #26.1.170.

Guillaume, Marcel. *See* #26.1.42.

Guillaumin, Jean-Yves. *Boèce: Institution arithmétique*, Paris: Les Belles Lettres, 1995, xcvi + 254 pp., Fr. 395. A French translation of the *Institutio arithmetica* of Boethius, with a lengthy introduction and copious "complementary notes." See the review by John Caldwell in *Isis* **88** (1997), 132–133. (DEZ) #26.1.74

Hahn, Alex. Two Historical Applications of Calculus, *College Mathematics Journal* **29** (1998), 93–103. An examination of a statics problem from L'Hôpital's calculus book and a page in Galileo's notebooks where he records an inclined-plane experiment. (DEZ) #26.1.75

Halmos, Paul. *See* #26.1.80.

Hashimoto, Keizo. *See* #26.1.142.

Hausrath, Alan R. *See* #26.1.120.

Hayashi, Takao. *See* #26.1.131.

Hersee, John. Multiplication Is Vexation, *Paradigm* **24** (1997), 24–33. Arithmetic copybooks or exercise books from the 19th century reflect the contents of the textbooks from which they were copied, often with a utilitarian purpose and stressing rules rather than reasons. (JGF) #26.1.76

Heyman, Jacques. Hooke's Cubico-Parabolical Conoid, *Notes and Records of the Royal Society of London* **52** (1998), 39–50. Robert Hooke presented to a Royal Society meeting in 1671 his conclusion that the perfect load-bearing dome was that formed by rotating a cubic parabola. It seems he had no mathematical demonstration of this, but was using his physical understanding of the problem. (JGF) #26.1.77

Hitchcock, Gavin. Dramatizing the Birth and Adventures of Mathematical Concepts: Two Dialogues, in #25.1.37, pp. 27–41. The power of dialogue and theater in reconstructing the historical story of informal mathematics-making is shown in two playlets, about the acceptance in Europe of decimal expansions of irrational numbers (a dialogue between Stifel and Stevin) and of negative roots of equations (Frend, Peacock, and De Morgan.) (JGF) #26.1.78

Hlawka, Edmund. Olga Taussky-Todd, 1906–1995, *Monatshefte für Mathematik* **123** (1997), 189–201. Obituary of Olga Taussky-Todd based on personal recollections and familiarity with her research. Her contacts with mathematicians, a summary of her research, and bibliography of her publications are included. See the review by C. J. Scriba in *Mathematical Reviews* **98c**:01040. (GSS) #26.1.79

Hoffman, Paul. *The Man Who Loved Only Numbers*, New York: Hyperion Books, 1998, 289 pp., hardbound, $22.95. A biography of Paul Erdős, aimed at a general audience, written by the *Encyclopaedia Brittanica* publisher who first met Erdős in 1986. See the review by Paul Halmos in *Notices of the American Mathematical Society* **45** (1998), 1156–1157. (DEZ) #26.1.80

Honma, Eio. Beeckman's Natural Philosophy, *Historia Scientiarum* **5** (1996), 225–247. Extensive study of the mechanical philosophy of Isaac Beeckman, who stimulated Descartes on the problems of physics. See the review by A. C. Garibaldi in *Mathematical Reviews* **98c**:01014. (GSS) #26.1.81

Horain, Yvette. Polygonal Areas: A Historical Project, in John Fauvel, ed., *History in the Mathematics Classroom: The IREM Papers*, Leicester: The Mathematical Association, 1990, pp. 113–136. Pupils were made aware of their local cultural heritage through exploring mathematics from manuscripts in their local Benedictine abbey (7th century onwards). Work on the area of polygons involved studying primary sources from Bayart, Euclid, Legendre, Ptolemy, Brahmagupta, and Chasles. (JGF) #26.1.82

Hormigón, Mariano. *See* #26.1.46.

Høyrup, Jens. The Four Sides and the Area: Oblique Light on the Prehistory of Algebra, in #25.1.37, pp. 45–65. The career of the problem of finding the side of a square from the sum of its four sides and the area, from its first appearance in an Old Babylonian text, through al-Khwārizmī, Abu Bakr, Savasorda, Leonardo of Pisa, and Luca Pacioli, to its last appearance in this form during the Renaissance, in a work of Pedro Nunez in 1567. (JGF) #26.1.83

Hughes, Barnabas. Purveyor of the History of Mathematics: A Retrospective, *Bulletin CSHPM/SCHPM* **22** (1998), 9–10, 12. The author reflects on his involvement with the history of mathematics, with a bibliography of his writings on the subject. (DEZ) #26.1.84

Hughes, Barnabas. The Earliest Correct Algebraic Solutions of Cubic Equations, in #25.1.37, pp. 107–112. The earliest correct algebraic solutions of cubic equations can be found in a 1344 manuscript, *Aliabraa argibra*, by Master Dardi of Pisa. There is no evidence that he influenced other mathematicians. (JGF) #26.1.85

Igoshin, V. I. Pages of a Biography of Mikhail Yakovlevich Suslin [in Russian], *Uspekhi Matematicheskikh Nauk* **51** (3) (1996), 3–16. This article describes the short life and the mathematics of M. Y. Suslin. Only one of his three papers was published in his lifetime. In it he gave an example of a set (later called a Suslin set) that proved Lebesgue's conjecture that every set with the Baire property is a Borel set. See the review by Frank Smithies in *Mathematical Reviews* **98d**:01039. (TBC) #26.1.86

Iliffe, Rob. Mathematical Characters: Flamsteed and Christ's Hospital Royal Mathematical School, #26.1.186, pp. 115–144. The vigorous debates surrounding the appointment of the Master of the Mathematical School of Christ's Hospital from 1673 onwards give insights into different attitudes to mathematics. Appointing Flamsteed's erstwhile assistant James Hodgson in 1709 ended the succession of masters of variable quality. (JGF) #26.1.87

Jackson, Allyn, and Kotschick, Dieter. Interview with Shiing Shen Chern, *Notices of the American Mathematical Society* **45** (1998), 860–865. The eminent geometer, S. S. Chern, speaks of his interaction with Élie Cartan, his proof of the generalized Gauss–Bonnet Theorem, and various approaches to differential geometry. (DEZ) #26.1.88

Jacob, Maurice. *See* #26.1.130.

James, Ioan M., and Wall, C. T. C. John Frank Adams (1930–1989), *Bulletin of the London Mathematical Society* **29** (1997), 489–501. Adams began his professional mathematics in algebraic topology in the 1950s, mainly under the influence of J. H. C. Whitehead. He is known for the "Adams spectral sequence" in homotopy theory, and he also wrote several expository books of "lasting importance." He was elected FRS in 1964. There is a photo, a list of his 22 research students and their thesis titles, and a list of his 82 publications. See the review by A. A. Ranicki in *Mathematical Reviews* **98c**:01041. (JA) #26.1.89

Jankowsi, Andrzej Wojciech; Marek, Wiktor; Orłowska, Ewa; and Skowron, Andrzej. Cecylia Rauszer (1942–1994) [in Polish], *Wiadomości Matematyczne* **32** (1996), 167–182. Scientific biography and research summary of the work of Cecylia Rauszer in mathematical logic and the use of logic in informatics. See the review by Zdzislaw Grodzki in *Mathematical Reviews* **98c**:01042. (GSS) #26.1.90

Joel, J. S. *See* #26.1.62, #26.1.107, and #26.1.138.

Johns, Adrian. Flamsteed's Optics and the Identity of the Astronomical Observer, in #26.1.186, pp. 77–106. Flamsteed progressively elaborated his notions of an astronomer's propriety, skill, and knowledge, and their connections, mediated especially through his views on light and optics. Eventually, his insistence on the high virtues required of the astronomer would reduce the population of practitioners acceptable to Flamsteed to just one: himself. (JGF) #26.1.91

Johnson, Phillip E. Early Newtonian and Leibnizian Development of the Calculus, *International Journal of Mathematical Education in Science and Education* **28** (1997), 803–816. A brief account for teachers of this story. See the summary in *Mathematical Reviews* **98h**:01010. (JA) #26.1.92

Jones, Alexander. Studies in the Astronomy of the Roman Period. I. The Standard Lunar Scheme, *Centaurus* **39** (1997), 1–36. A detailed investigation of the further development of Babylonian methods for predicting lunar longitudes and latitudes from the Roman period of Greek astronomy. See the review by George Abraham in *Mathematical Reviews* **98c**:01001. (GSS) #26.1.93

Jones, Alexander. Studies in the Astronomy of the Roman Period. II. Tables for Solar Longitude, *Centaurus* **39** (1997), 211–239. The "first evidence of non-Ptolemaic solar tables" which date from some time after the third century is contained in three fragmentary tables written on papyrus and found at the ruins at Oxyrhynchus in Egypt. This is a preliminary study of these tables. See the review by George Abraham in *Mathematical Reviews* **98h**:01002. (JA) #26.1.94

Kanamori, Akihiro. *See* #26.1.44.

Katz, Victor J. Combinatorics and Induction in Medieval Hebrew and Islamic Mathematics, in #25.1.37, pp. 99–106. The earliest mention of combination and permutation problems is found in Indian mathematics, while the detailed development of formulas, and their proofs, was accomplished in the Islamic and Jewish worlds from the 12th to the 14th century. (JGF) #26.1.95

Katz, Victor J. *See also* #26.1.41 and #26.1.61.

Kenig, Carlos E. *See* #26.1.24.

Kerszberg, Pierre. *See* #26.1.45.

Kielkopf, Charles F. *See* #26.1.98.

Knobloch, Eberhard. *See* #26.1.123.

Knorr, Wilbur R. "Rational Diameters" and the Discovery of Incommensurability, *American Mathematical Monthly* **105** (1998), 421–429. The author presents a geometric reconstruction for the incommensurability of the side and diagonal of a square that denies priority to Aristotle's standard "odd even" argument. The reconstruction suggests a transmission from the Mesopotamian tradition of geometric problems of the quadratic type. (DEZ) #26.1.96

Knorr, Wilbur R. The Method of Indivisibles in Ancient Geometry, in #25.1.37, pp. 67–86. The technique of measurement via indivisibles as found in Kepler or Cavalieri amounts to a reinvention of a heuristic underlying the work of Archimedes. The use of indivisibles was not unique to Archimedes, but owed its origins to geometers before him and continued in use after him. Similar-looking work in ancient China may represent independent invention. (JGF) #26.1.97

Kotschick, Dieter. *See* #26.1.88.

Krengel, U. *See* #26.1.65.

Kuhn, Friedrich. *Ein anderes Bild des Pragmatismus*, Frankfurt am Main: Vittorio Kolstermann, 1996, 306 pp., DM 98. A scholarly discussion of the history of the concepts and techniques of probability calculations that focuses on C. S. Peirce's reaction to the work of DeMorgan, Boole, and Venn. Includes a technical analysis of Peirce's "On the theory of errors of observation." How Peirce found a role for probability in justifying induction is linked with his development of a concept of reality. See the review by Charles F. Kielkopf in *Mathematical Reviews* **98c**:01025. (GSS) #26.1.98

Kühnau, R. Herbert Grötzsch zum Gedächtnis, *Jahresbericht der Deutschen Mathematiker-Vereinigung* **99** (1997), 122–145. A scientific review of the life and work of Herbert Grötzsch (b. 1902), a protégé of Paul Koebe, who made important contributions to geometric function theory, especially to quasiconformal mappings. See also #26.1.174 and the review by Michael von Renteln in *Mathematical Reviews* **98h**:01026. (JA) #26.1.99

Kunitzsch, Paul. *See* #26.1.57.

Kusch, Martin. *Psychologism: A Case in the Sociology of Philosophical Knowledge*, London/New York: Routledge, 1995, 327 pp. See the review by Jeremy Gray in *Historia Mathematica* **25** (1998), 325–326, who enumerates three reasons why the book deserves the attention of historians of mathematics. (DEZ) #26.1.100

LaDuke, Jeanne *See* #26.1.71.

Laita, Luis M. *See* #26.1.42.

Laubenbacher, Reinhard C., and Pengelley, David. Mathematical Masterpieces: Teaching with Original Sources, in #25.1.37, pp. 257–260. In an upper-level honors course students read original texts in an unmediated way, discovering the mathematics for themselves and writing extensively. The result is a dramatically different perception of mathematics as an evolving human endeavor. Sources range from Archimedes to Conway. (JGF) #26.1.101

Lay, Juliane. *L'Abrégé de l'Almageste*: Un inédit d'Averroès en version hébraïque, *Arabic Sciences and Philosophy: A Historical Journal* **6** (1996), 3, 5–6, 23–61. A revised summary of a 1991 doctoral dissertation which consisted of a critical edition of a French translation of and a commentary on the first part of a Hebrew translation (1231–1235) of the *Abridgement of the Almagest* by Ibn Rushd/Averroës (1126–1198). See the very favorable review by Julio Samsó Moya in *Mathematical Reviews* **98d**:01008. (TBC) #26.1.102

Lefebvre, Jacques. *See* #26.1.21.

Le Goff, Jean-Pierre. Cubic Equations at Secondary School Level: Following in Euler's Footsteps, in Evelyne Barbin and Régine Douady, eds., *Teaching Mathematics: The Relationship between Knowledge, Curriculum and Practice*, Metz: Topiques Éditions 1996, pp. 11–34. Whether or not included in the curriculum, cubic equations are important for leading to the emergence of imaginary numbers and to the solution of trigonometric equations. A class of 17-year-olds in Normandy tackled a text of Euler as an investigation, here described in detail. The same text was explored differently in another class. (JGF) #26.1.103

Le Goff, Jean-Pierre. Desargues et la naissance de la géométrie projective, in Jean Dhombres and J. Sakarovitch, eds., *Desargues en son temps*, Paris: Blanchard, 1994, pp. 157–206. An analysis of Girard Desargues's geometrical work that gives reasons why Desargues's revolutionary work was not recognized. See *Mathematical Reviews* **98b**:01001 and the review by Victor V. Pambuccian in *Mathematical Reviews* **98d**:01016. (TBC) #26.1.104

Levy, Abraham. Bad Timing, *Biblical Archeological Review* **24** (4) (1998), 18–23. This article claims that the earlier identification of an artifact from the Qumran excavations as a sundial is incorrect, and the misidentified artifact is actually a “mehen” game board. However, all of the mehen boards depicted in the article do not have the concentric circular pattern of the artifact but instead exhibit a spiral pattern. (VM) #26.1.105

Levy, Tony. L'histoire des nombres amiables: Le témoignage des textes hebreux medievaux, *Arabic Science and Philosophy* **6** (1996), 3–4, 6, 63–87. This is “a survey of all available information, most of which is absolutely new, on the Hebrew channel for the transmission” of the Rule of Thabit ibn Qurra for generating pairs of amicable numbers. See the review by Julio Samsó Moya in *Mathematical Reviews* **97h**:01008. (JA) #26.1.106

Lewis, Albert. *See* #26.1.72.

Lokot', Natalia Vasilevna. *See* #26.1.43.

Lumiste, Ulo. Differential Geometry in Estonia: History and Recent Developments [in Finnish], *Arkhimedes* **4** (1996), 31–34. A general discussion of the mathematics taught in Tartu (formerly Dorpat) since the foundation of a university in 1632. The work of four 19th-century mathematicians (Martin Bartels, Carl Eduard Senff, Ferdinand Minding, and Karl Peterson) is discussed. Progress since 1950 is mentioned in a final section. See the review by J. S. Joel in *Mathematical Reviews* **97h**:01021. (JA) #26.1.107

Luna Alcoba, Manuel. G. W. Leibniz: Geschichte des Kontinuumproblems, *Studia Leibnitiana* **28** (1996), 183–198. An annotated transcription of an unpublished memorandum (in Latin, c. 1693) which provides insight into Leibniz's concern for the continuum. (EAM) #26.1.108

Luzin, Nikolai N. Function: Part II, *American Mathematical Monthly* **105** (1998), 263–270. A translation of a paper that traces the major lines of development of the theory of functions of real and complex variables. A tree diagram (p. 264) depicts the main branches. See also #25.3.75. (DEZ) #26.1.109

Lyubina, G. I. *Russia and France. The History of Scientific Cooperation (In the Second Half of the 19th Century and the Start of the 20th)* [in Russian], Moscow: Yanus, 1996, 263 pp. Traces the connections between Russia and France during the second half of the 19th century. Documents from the archives of both countries are used to show the cooperation between them. Of particular interest is the development of Cauchy's ideas in the work of Russian analysts. The text also contains prints of French and Russian scholars that are of excellent quality. See the review by R. L. Cooke in *Mathematical Reviews* **98c**:01027. (GSS) #26.1.110

Mačák, Karel. Huygens' Essay "De ratiociniis in ludo aleae" (On the 300th Anniversary of the Death of Christiaan Huygens) [in Czech], *Pokroky Matematiky, Fyziky & Astronomie* **41** (1996), 180–197. The role of a 1657 essay by Christiaan Huygens on the early development of probability theory. (DEZ) #26.1.111

MacKenzie, Adrian. Undecidability: The History and Time of the Universal Turing Machine, *Configurations* **4** (1996), 359–379. In *Mathematical Reviews* **98d**:01036, A. D. Boothin comments on the author's lack of credit given to Leibniz and Babbage concerning the origins of general purpose computing and writes, "This is a philosophical paper of little interest to mathematicians." (TBC) #26.1.112

MacKinnon, Nick. The Portrait of Fra Luca Pacioli, *Mathematical Gazette* **77** (1993), 130–219. The student in Jacopo de Barbari's 1495 portrait of Luca Pacioli is probably Albrecht Dürer, and the water-filled rhombicuboctahedron is the work of Leonardo da Vinci. The painting records one of the greatest moments of the Renaissance, the transmission to Dürer (hence to northern Europe) of the geometry of ancient Greece and the basis of the new art of Italy. (JGF) #26.1.113

Mac Lane, Saunders. *See* #26.1.71.

Maddox, Ivor J. Brian Kuttner (1908–1992), *Bulletin of the London Mathematical Society* **29** (1997), 745–753. Kuttner spent all of his professional life at the University of Birmingham (from 1932 until 1975) where he produced a steady stream of work (from 1934 until 1994) on summability theory and various of its related fields of analysis. There are a photo and a list of his 122 published papers. See the review by Margaret A. M. Murray in *Mathematical Reviews* **98h**:01029. (JA) #26.1.114

Maiti, N. L. Antiquity of Trairāśika in India, *Gaṇita-Bhāratī* **18** (1996), 1–8. The concept of the rule of three is traced back to 600 B.C. in India. This appears to contradict the claim in Joseph Needham's *Science and Civilization in China*, Vol. 3, that the rule's Chinese references occur "earlier than in any Sanskrit texts." See the review by Mahmood Ahmad Pathan in *Mathematical Reviews* **98h**:01008. (JA) #26.1.115

Malzkorn, Wolfgang. Kants Kritik an der traditionellen Syllogistik, *History and Philosophy of Logic* **16** (1995), 75–88. The author argues that not only did Immanuel Kant maintain his attack on the traditional syllogistic theory of the four figures, he also founded it on his transcendental philosophical distinction of understanding and reason. (DEZ) #26.1.116

Mancha, J. L. Heuristic Reasoning: Approximation Procedures in Levi ben Gerson's Astronomy, *Archive for History of Exact Sciences* **52** (1998), 13–50. An explanation of the method of *heqqesh tahbuli* ("heuristic reasoning") used by Levi ben Gerson (1288–1344) in his *Astronomy*, a description of the kind of problems for which he used it, and reconstructions of some of its applications. (JGF) #26.1.117

Marek, Wiktor. *See* #26.1.90.

Maschler, Michael. Elaine Bennett (1951–1995), *Games and Economic Behavior* **19** (1997), 243–248. Describes Bennett's contributions to game theory and contains a complete list of publications. See the review in *Mathematical Reviews* **98c**:01045. (GSS) #26.1.118

Maurin, Krzysztof. *The Riemann Legacy: Riemannian Ideas in Mathematics and Physics*, Dordrecht: Kluwer Academic, 1997, xxii + 717 pp., hardbound, $349. From the publisher: Riemann perceived mathematics and physics as one discipline and thought of himself as both mathematician and physicist. His ideas as well as their contemporary descendants are the theme of this book. (DEZ) #26.1.119

McMurran, Shawnee L., and Tattersall, James J. Cartwright and Littlewood on Van Der Pol's Equation, in Michael L. Lapidus, Lawrence H. Harper, and Adolfo J. Rumbos, *Harmonic Analysis and Nonlinear Differential Equations*, Providence: American Mathematical Society, 1997, pp. 265–276. For more than 10 years, during the 1920s and 1930s, M. L. Cartwright and J. E. Littlewood conducted studies of the van der Pol equation and its generalizations. From this work they were led to a fixed point theorem, an application of Poincaré's transformation theory, large parameter theory, and early investigations of the modern theory of dynamical systems and chaos theory. See the review by Alan R. Hausrath in *Mathematical Reviews* **98h**:01020. (JA) #26.1.120

Medvedev, F. A. Nonstandard Analysis and the History of Classical Analysis, *American Mathematical Monthly* **105** (1998), 659–664. A discussion of "the need for a substantial correction of the history of [classical] mathematical analysis" (p. 663) based on the construction of nonstandard analysis in the middle of the 20th century. (DEZ) #26.1.121

Mendelson, E. *See* #26.1.55.

Merzbach, Uta. *See* #26.1.71.

Mett, Rudolf. *Regiomontanus: Wegbereiter des neuen Weltbildes*, Stuttgart/Zürich: B. G. Teubner Verlagsgesellschaft GmbH/Verlag der Fachvereine, 1996, 204 pp., DM 24.80. A popular biography of Johannes Müller, a "pioneer of a new world view," with a very valuable bibliography. See the review by C. J. Scriba in *Mathematical Reviews* **98c**:01009. (GSS) #26.1.122

Moll, Konrad. *Der junge Leibniz, III*, Stuttgart: Friedrich Frammann Verlag Günther Holzboog Gmb H & Co., 1996, 301 pp., DM 198. The final volume on the development of Leibniz's thought in his youth. The author shows how deeply Leibniz was influenced by Hobbes's concept of 'conatus' and Cavalieri's indivisibles. Two main dates of Leibniz's philosophy are underlined: the 1670 correlation of the point concept with the conatus concept and the 1671 explanation of the origin of the world harmony. See the review by Eberhard Knobloch in *Mathematical Reviews* **98c**:01015. (GSS) #26.1.123

Moore, Gregory H. The Evolution of Magnitude, *Bulletin CSHPM/SCHPM* **22** (1998), 11–12. An essay on the definition of magnitude in ancient Greece and 18th-century Europe. (DEZ) #26.1.124

Moreton, Jennifer. Doubts About the Calendar: Bede and the Eclipse of 664, *Isis* **89** (1998), 50–65. Bede's *De temporum ratione* (AD 725) contains the seeds of later calendar reform. His awareness of the solar eclipse of May 664 showed the Roman calendar to be inaccurate. (JGF) #26.1.125

Murawski, Roman. *See* #26.1.132, #26.1.148, and #26.1.164.

Murray, Margaret A. M. *See* #26.1.114.

Musielak, Julian, and Wnuk, Witold. Andrzej Alexiewicz (1917–1995) [in Polish], *Wiadomości Matematyczne* **32** (1996), 153–165. A biography of the Polish mathematician, A. Alexiewicz, with an indication of his work, a list of his publications, and a description of scientific life in Lvov from 1939 to 1945. (DEZ) #26.1.126

Narici, Lawrence, and Beckenstein, Edward. The Hahn–Banach Theorem: The Life and Times, *Topology and its Applications* **77** (1997), 193–211. A discussion of the mathematical world at the time of the Hahn–Banach theorem's development, its connection to the axiom of choice, its ancestors, and its consequences. See the review in *Mathematical Reviews* **98c**:01033. (GSS) #26.1.127

Nasr, Seyyed Hossein. *See* #26.1.144 and #26.1.145.

Neumann, Peter M. *See* #26.1.183.

Nouet, Monique. Using Historical Texts in the Lycée, in Evelyne Barbin and Régine Douady eds., *Teaching Mathematics: The Relationship between Knowledge, Curriculum and Practice*, Metz: Topiques Éditions 1996, 125–138. Using primary historical texts has several benefits, which are seen in the study of texts by Roberval, Pascal, Archimedes, and Arnauld. (JGF) #26.1.128

Odenkirchen, Michael. *See* #26.1.17.

Olive, David I. *See* #26.1.130.

Orłowska, Ewa. *See* #26.1.90.

Osler, Margaret. Eloge: Richard S. Westfall, 22 April 1924–21 August 1996, *Isis* **88** (1997), 178–181. An obituary of the historian of science, Sam Westfall, best known for his distinguished place in Newtonian studies. (DEZ) #26.1.129

Pais, Abraham; Jacob, Maurice; Olive, David I.; and Atiyah, Michael F. *Paul Dirac: The Man and His Work*, Cambridge, UK: Cambridge Univ. Press, 1998, 140 pp., hardbound, $19.95. A collection of four essays on the life and work of Paul Dirac. A. Pais provides biographical details while the other authors describe the influence of the Dirac equation, Dirac's operator, and their influence on mathematics and physics. See the review by Clifford H. Taubes in *Notices of the American Mathematical Society* **45** (1998), 1154–1155. (DEZ) #26.1.130

Pambuccian, Victor V. *See* #26.1.16, #26.1.104, and #26.1.139.

Parameswaran, S. Mādhavan, the Father of Analysis, *Gaṇita-Bhāratī* **18** (1996), 67–70. This paper gives, according to Jyesthadeva's (fl. 1500–1575) astronomical work, an outline of the derivations of the power series expansions of sine and cosine attributed to Madhava of Sangamagrama (fl. 1380–1420). See the review by Takao Hayashi in *Mathematical Reviews* **98d**:01012. (TBC) #26.1.131

Paramhans, S. A. *See* #26.1.34.

Parker, Willard. *See* #26.1.40.

Parsons, Charles. Hao Wang as Philosopher, in Petr Hájek, ed., *Logical Foundations of Mathematics, Computer Science and Physics—Kurt Gödel's Legacy*, Berlin: Springer-Verlag, 1996, pp. 64–80. A consideration of H. Wang's life as a philosopher and his contributions to philosophy. See the review by Roman Murawski in *Mathematical Reviews* **98c**:01034. (GSS) #26.1.132

Pathan, Mahmood Ahmad. *See* #26.1.115.

Peck, Linda Levy. Uncovering the Arundel Library at the Royal Society: Changing Meanings of Science and the Fate of the Norfolk Donation, *Notes and Records of the Royal Society of London* **52** (1998), 3–24. The bulk of the great Renaissance library given to the Royal Society in 1667 by the grandson of Thomas Howard, Earl of Arundel, was sold off over the period 1829–1925 but hundreds of volumes remain in the Royal Society. (JGF) #26.1.133

Peckhaus, Volker. *Logik, Mathesis universalis und allgemeine Wissenschaft*, Berlin: Akademie Verlag, 1997, xii + 412 pp., DM 134. The influence of Leibniz's work in logic on 18th- and 19th-century philosophy is discussed. This book argues that symbolic logic in Germany and in England (especially that of George Boole and his successors) was "independent of Leibniz' anticipating ideas." See the review by Hourya Sinaceur in *Mathematical Reviews* **98h**:01013. (JA) #26.1.134

Peckhaus, Volker. The Way of Logic into Mathematics, *Theoria (San Sebastián)* **12** (1997), 39–64. The author posits the view that logic in the second half of the 19th century experienced a split rather than a paradigmatic shift, and that historical methodology should explain the emergence of the split. Foundational crises in mathematics are used to illustrate the author's point. See the review by Eduard Glas in *Mathematical Reviews* **98c**:01028. (GSS) #26.1.135

Pengelley, David. *See* #26.1.101.

Pérez, Aurora. *See* #26.1.42.

Pesic, Peter. Secrets, Symbols, and Systems: Parallels between Cryptanalysis and Algebra, 1580–1700, *Isis* **88** (1997), 674–692. Several important algebraists were code breakers, notably Viète and Wallis. Parallels between algebra and cryptanalysis illuminate the symbolism and methodical procedure characterizing both activities and help us understand what is fundamentally new in Viète's work. (JGF) #26.1.136

Pitt, H. R. John Charles Burkill (1900–1993), *Bulletin of the London Mathematical Society* **30** (1998), 85–98. Charles Burkill's mathematical work began in the early 1920s with his studies of functions of intervals and led to the so-called "Burkill integral." He studied other integrals and related topics in analysis, and he wrote several "well-known textbooks which still rank as standard texts." He was associated with Peterhouse, Cambridge continuously from 1929 until the end of his life, and he was elected FRS in 1953. He and his wife were very active in organizations which rescued refugees fleeing the Nazis. There are a photo and a list of his 27 papers and several books. (JA) #26.1.137

Pla i Carrera, Josep. The Mathematics and Mathematicians of the French Revolution [in Catalan], *Butlleti de la Societat Catalana de Matematiques* **11** (1996), 31–78. The author works out some ramifications of the idea of I. B. Cohen that the intellectual revolution of the philosophies was a precursor of the idea of scientific revolutions, using the research and pedagogical works of Lagrange, Condorcet, Monge, Laplace, Legendre, and Carnot. See the review by J. S. Joel in *Mathematical Reviews* **98c**:01020. (GSS) #26.1.138

Plotnitsky, Arkady. *See* #26.1.165.

Pont, Jean-Claude. *Autour de la naissance de la géométrie non-euclidienne*, Clermont-Ferrand: Univ. Blaise Pascal, 1997, 26 pp. The author argues that an "epistemological paradigm change" is what underlies the fact that, on the one hand, it took so long to discover (or devise) non-Euclidean geometry and yet, on the other hand, this revolutionary advance was accomplished simultaneously by several mathematicians and then was widely accepted. See the review by Victor V. Pambuccian in *Mathematical Reviews* **98h**:01015. (JA) #26.1.139

Pourciau, Bruce. The Preliminary Mathematical Lemmas of Newton's *Principia*, *Archive for History of Exact Sciences* **52** (1998), 279–295. Contrary to their reputation as obscure and difficult, the opening 11 lemmas of *Principia* are in fact coherent geometrical accounts of elementary definitions or theorems of the calculus. There is no reason to posit an explicit translation from his earlier algebraic calculus; rather, in his fluency he would have seen them as transparently equivalent. (JGF) #26.1.140

Pritchard, Chris. Tendril of the Hop and Tendril of the Vine: Peter Guthrie Tait and the Promotion of Quaternions, Part I, *Mathematical Gazette* **82** (1998), 26–36. P. G. Tait and Clerk Maxwell discussed terminology for quaternions and vectors, and in 1871 sought advice from the London Mathematical Society: the tendril of the vine, or right-handed screw, was the choice adopted for the orientation of vector axes. (JGF) #26.1.141

Qu, Anjing. Bian Gang: A Mathematician of the 9th Century, *Historia Scientiarum* **6** (1996), 17–30. Bian Gang was a calculator of calendars who introduced certain mathematical functions to aid in the computation of solar and lunar motions. The reviewer in *Mathematical Reviews* points out that the interpolation algorithm claimed to be original with Bian Gang actually came to him with a considerable history in Chinese astronomy. See the review by Keizo Hashimoto in *Mathematical Reviews* **98h**:01004. (JA) #26.1.142

Quadling, Douglas. A Century of Textbooks, *Mathematical Gazette* **80** (1996), 119–126. The two most influential textbooks of the early 20th century in British schools were *Elementary Geometry* (1902) by Godfrey and Siddons and *Pure Mathematics* (1908) by G. H. Hardy. These and later textbooks set curricular standards and were actively supported by their publishers. (JGF) #26.1.143

Ranicki, A. A. *See* #26.1.89.

Rashed, Roshdi. *Fondateurs et commentateurs: Banu Musa, Ibn Qurra, Ibn Sinan, al-Khazin, al-Quhi, Ibn al-Samh, Ibn Hud*, London: Al-Furqan Islamic Heritage Foundation, 1993, xiv + 1106 + vi pp., £80. This work, the first volume in the series "Les mathématiques infinitésimales du IX^{e} au XI^{e} siècle," examines Islamic studies of problems connected with curvilinear figures. See the review by Seyyed Hossein Nasr in *Isis* **89** (1998), 112–113. (DEZ) #26.1.144

Rashed, Roshdi. *Ibn Al-Haytham*, London: Al-Furqan Islamic Heritage Foundation, 1993, xii + 581 + 5 pp., £80. The second volume in a series examining Islamic studies of problems connected with curvilinear figures. See the review by Seyyed Hossein Nasr in *Isis* **89** (1998), 112–113. (DEZ) #26.1.145

Renn, Jürgen. Einstein's Controversy with Drude and the Origin of Statistical Mechanics: A New Glimpse from the "Love Letters," *Archive for History of Exact Sciences* **51** (1997), 315–354. Einstein's statistical mechanics of 1902 reinterpreted existing results by Boltzmann. The conceptual innovation, constituting a crucial and influential change of perspective, arose from a new context of application of statistical physics. Einstein's 1901 controversy with Drude was really with Boltzmann. (JGF) #26.1.146

Renn, Jürgen. Von der klassischen Trägheit zur dynamischen Raumzeit: Albert Einstein und Ernst Mach, *Berichte zur Wissenschaftsgeschichte* **20** (1997), 189–198. From the summary in *Mathematical Reviews* **98h**:01022: "The characteristics and the success of Einstein's path to general relativity are explained by his non-specialist, integrative outlook on the problem of classical physics." (JA) #26.1.147

Rodriguez-Consuegra, Francisco. Nominal Definitions and Logical Consequences in the Peano School, *Theoria (San Sebastián)* **12** (1997), 125–137. The paper shows the development of some of the model-theoretic ideas in the Peano school. See the review by Roman Murawski in *Mathematical Reviews* **98c**:01035. (GSS) #26.1.148

Rogers, C. A. Richard Rado (1906-1989), *Bulletin of the London Mathematical Society* **30** (1998), 185–195. Rado was a student of Issai Schur at the University of Berlin (1933), and after fleeing the Nazis, of G. H. Hardy at Cambridge (1935). Rado's major contributions were to Hall's theorem and abstract independence and to Ramsey's theorem and partition relations. His manuscripts and 64 diaries are at the Reading University Library. There is a photo and a list of his 119 papers (18 with Paul Erdös) and one book. (JA) #26.1.149

Roseau, Maurice. La vie et l'oeuvre de Thomas Brooke Benjamin, *La vie des sciences* **13** (1996), 469–472. Describes the life and career of T. B. Benjamin, FRS (1929–1995), whose work was primarily in mathematical and experimental hydrodynamics. Includes a photograph. See the review in *Mathematical Reviews* **98c**:01046. (GSS) #26.1.150

Rowe, David E. New Trends and Old Images in the History of Mathematics, in #25.1.37, pp. 3–16. Two contrasting approaches to the history of mathematics can be identified: from the standpoint of historians of science, and from that of modern mathematicians, exemplified in the practices of the late-19th-century historians Cantor and Zeuthen. (JGF) #26.1.151

Russo, Lucio. The Definitions of Fundamental Geometric Entities Contained in Book I of Euclid's *Elements*, *Archive for History of Exact Sciences* **52** (1998), 195–219. The definitions of fundamental geometric entities which open Euclid's *Elements* are actually excerpts from Heron of Alexandria's *Definitions*, interpolated in late antiquity. (JGF) #26.1.152

Sadosky, Cora. *See* #26.1.24.

Samsó Moya, Julio. *See* #26.1.102, #26.1.106, and #26.1.159.

Šanjek, Franjo. The Studies of Exact and Natural Sciences in the History of the Dubrovnik Dominicans, *Dubrovnik Annals* **1** (1997), 9–24. A review of the St. Dominic faculty and the incunabula shelved in the Dominican library from the 12th through the 15th century reveals the first stages of the scientific method. (DEZ) #26.1.153

Schneider, Ivo. Wie Huren und Betrüger—Die Begegnung des jungen Descartes mit der Welt der Praktiker der Mathematik, *Berichte zur Wissenschaftsgeschicte* **20** (1997), 173–188. German mathematical practitioners, some of whom were associated with the Rosicrucians, exerted a special influence on René Descartes during and after the winter of 1619–1620. From this, one may explain, at least in part, the strong reactions to Cartesianism in Protestant Europe. See the summary in *Mathematical Reviews* **98h**:01011. (JA) #26.1.154

Schneider, Jochen. *Research Report 1996–1997*, Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 1998, 336 pp. The Max Planck Institute for the History of Science was established in 1994 as the successor to the Kaiser-Wilhelm-Gesellschaft. Its primary focus is on the history of the natural sciences and mathematics. The reports in this volume summarize the research activity at the Institute during 1996 and 1997. (DEZ) #26.1.155

Scriba, Christoph J. Bartel Leendert van der Waerden (1903–1996) [in German], *Mitteilungen der Mathematischen Gesellschaft in Hamburg* **15** (1996), 13–18. Brief biography of B. L. van der Waerden. (DEZ) #26.1.156

Scriba, Christoph J. Bartel Leendert van der Waerden (2 Februar 1903–12 Januar 1996) [in German], *Berichte zur Wissenschaftsgeschicte* **19** (1996), 245–251. Obituary of the Dutch algebraist and historian of mathematics, B. L. van der Waerden. (DEZ) #26.1.157

Scriba, Christoph J. *See also* #26.1.79.

Series, Caroline. And What Became of the Women? *Mathematical Spectrum* **30** (1997/8), 49–52. Chronicles the struggle in 19th-century England for women to take mathematical examinations and degrees. Charlotte Angas Scott, Grace Chisholm Young, and Philippa Fawcett, for example, all did very well on the Mathematical Tripos but were only recognized in an unofficial manner. (PR) #26.1.158

Sesiano, Jacques. *Un traité médiéval sur les carrés magiques*, Lausanne: Presses Polytechniques et Universitaires Romandes, 1996, iv + 208 pp., sFr. 80. Includes an Arabic edition of an anonymous work on magic squares, accompanied by a fully annotated French translation, as well as a shorter summary on the same topic. See the review by Julio Samsó Moya in *Mathematical Reviews* **98e**:01007. (EAM) #26.1.159

Shea, William R. *See* #26.1.56.

Sheynin, Oscar. Stochastic Thinking in the Bible and the Talmud, *Annals of Science* **55** (1998), 185–198. The Bible and the Talmud contain interesting examples of stochastic thinking, which seems widespread in and natural to the ancient world. The Talmudic commentator Maimonides introduced a rudimentary scale of probabilities, and his reasoning is heuristically akin to later considerations of Newton and Jakob Bernoulli. (JGF) #26.1.160

Sheynin, Oscar. The Theory of Probability: Its Definition and its Relation to Statistics, *Archive for History of Exact Sciences* **52** (1998), 99–108. Jakob Bernoulli gave the first definition of the theory of probability in his *Ars conjectandi* (1713). Relations between probability theory and statistics are fuzzy. The stochastic theory of errors was once a chapter of probability and a source of ideas for statistics, but later became a separate entity under the dominion of statistics. (JGF) #26.1.161

Siegmund-Schultze, Reinhard. Eliakim Hastings Moore's "General Analysis," *Archive for History of Exact Sciences* **52** (1998), 51–89. E. H. Moore's "General Analysis," which sought to combine set theory and structure-theoretic algebra with classical analysis, failed to a large extent and had hardly any direct influence on subsequent functional analysis. One reason might be the relative isolation of the U.S. from Europe then, as well as its huge internal distances. (JGF) #26.1.162

Simmons, John. *The Scientific 100: A Ranking of the Most Influential Scientists, Past and Present*, Secaucus, NJ: Citadel Press, 1996, xxii + 504 pp., $29.95. Isaac Newton is number one. See the review by Audrey B. Davis in *Isis* **89** (1998), 321. (DEZ) #26.1.163

Simon, Petr. *See* #26.1.8.

Sinaceur, Hourya. Mathématiques et métamathématique du congrès de Paris (1990) au congrès de Nice (1970): Nombres réels et théorie des modèles dans les travaux de Tarski, in Umberto Bottazzini, ed., *Studies in the History of Modern Mathematics, II,* Palermo: Circolo Matematico di Palermo, 1996, pp. 113–132. The paper is devoted to the presentation of Tarski's contributions to the metamathematics of the theory of real numbers and to model theory. See the review by Roman Murawski in *Mathematical Reviews* **98c**:01036. (GSS) #26.1.164

Sinaceur, Hourya. *See also* #26.1.134.

Skowron, Andrzej. *See* #26.1.90.

Smith, Barbara Herrnstein, and Plotnitsky, Arkady, eds. *Mathematics, Science, and Post-classical Theory*, Durham/London: Duke Univ. Press, 1997, viii + 280 pp., hardbound $49.95, paperbound $16.95. A collection of articles on various aspects of science and mathematics, including Andrew Pickering, "Concepts and the Mangle of Practice: Constructing Quaternions," Owen Flanagan, "The Moment of Truth on Dublin Bridge: A Response to Andrew Pickering," Andrew Pickering, "Explanation, Agency, and Metaphysics: A Reply to Owen Flanagan," and J. Vignaux Smyth, "A Glance at SunSet: Numerical Fundaments in Frege, Wittgenstein, Shakespeare, Beckett." For a complete list of the contents see *Isis* **89** (1998), 180. (DEZ) #26.1.165

Smithies, Frank. The Shaping of Functional Analysis, *Bulletin of the London Mathematical Society* **29** (1997), 129–138. The author stresses the role of linear operators in the shaping of functional analysis. Interesting remarks are made on the development of adjoint operators in the years prior to the Hahn–Banach theorem. There is an ample bibliography. See the review by Jaroslav Zemánek in *Mathematical Reviews* **98c**:01037. (GSS) #26.1.166

Smithies, Frank. *See also* #26.1.86 and #26.1.181.

Stewart, Ian G. "Professor" John Flamsteed, in #26.1.186, pp. 145–166. Flamsteed built up a network of contacts through his letters in which he sought to define the cultural identity of the Astronomer Royal through cultivating a variety of voices: the Church of England clergyman, the pedagogue as priestly guardian of young minds, and the Gresham professor. (JGF) #26.1.167

Street, Tony. Ṭūsī on Avicenna's Logical Connectives,*History and Philosophy of Logic* **16** (1995), 257–268. Discusses how the 13th-century logician Ṭūsī uses two logical connectives to construct "if–then" and "either–or" propositions. (EAM) #26.1.168

Strelcyn, Jean-Marie. *See* #26.1.43.

Strøm, Elin. Marius Sophus Lie, in Olav Arnfinn Laudal and Bjørn Jahren, eds., *The Sophus Lie Memorial Conference (Oslo 1992)*, Oslo: Scandinavian Univ. Press, 1994, pp. ix–xxviii. A biography of Sophus Lie with 15 photographs. Includes quotations from letters to Ernst Motzfeld. (EAM) #26.1.169

Stroup, Alice. Christian Huygens et l'Académie royale des sciences, *La vie des sciences* **13** (1996), 333–341. A summary of the accomplishments of Christiaan Huygens. See the review by Niccolò Guicciardini in *Mathematical Reviews* **98d**:01018. The reviewer recommends the reading of this paper. (TBC) #26.1.170

Struik, Dirk J. *See* #26.1.25.

Swetz, Frank. Enigmas of Chinese Mathematics, in #25.1.37, pp. 87–97. Carefully documented research for a century and a half has failed to resolve debates on the nature and origin of Chinese mathematics. The enigma can be unraveled if it is accepted that Chinese mathematics is different, and an understanding of that difference is sought. (JGF) #26.1.171

Tattersall, James J. How Many People Have Ever Lived?, in #25.1.37, pp. 331–337. A stimulating and provocative demographic exercise for the mathematics class, combining the history of population estimates with that of life expectancy. (JGF) #26.1.172

Tattersall, James J. *See also* #26.1.120.

Taubes, Clifford H. *See* #26.1.130.

Thiele, Rüdiger. Das Zerwürfnis Johann Bernoullis mit seinem Bruder Jakob, *Acta Historica Leopoldina* **27** (1997), 257–276. The quarrel between the Bernoulli brothers and its reflections in history. Johann Bernoulli was a difficult character but an excellent mathematician, sometimes underestimated by those investigating the controversy. (JGF) #26.1.173

Tietz, Horst. Herbert Grötzsch in Marburg, *Jahresbericht der Deutschen Mathematiker-Vereinigung* **99** (1997), 146–148. An account of Grötzsch's short time (1946-1948) at the University of Marburg during the depression which followed the end of World War II. See also #26.1.99 and the review by Michael von Renteln in *Mathematical Reviews* **98h**:01027. (JA) #26.1.174

Turner, John Christopher, and Van de Griend, Pieter, eds. *History and Science of Knots,* River Edge, NJ: World Scientific Publishing Co., 1996, xii + 449 pp., $78. An anthology of essays on the history of knots, ranging from Pleistocene knotting through ancient Egyptian rope and knots as well as Peruvian quipu to modern knot theory, ending with the second editor's paper, "On the true love knot." See the review by G. Burde in *Mathematical Reviews* **98e**:01003. (DEZ) #26.1.175

Tzanakis, Constantinos. Rotations, Complex Numbers and Quaternions, *International Journal of Mathematics Education in Science and Technology* **26** (1995) 45–60. In extending the relation between complex numbers and plane rotations to space rotations and some generalization of complex numbers, one is led to Hamilton's quaternions and its applications. The presentation is inspired by history and aims at giving a natural formulation of important algebraic concepts. (JGF) #26.1.176

Ullrich, Peter. The Riemann Mapping Problem, *Supplemento ai Rendiconti del Circolo matematico di Palermo, Serie II* **44** (1996), 9–42. Research on a generalization of the Riemann mapping theorem (from one to several complex variables) began with a Poincaré article of 1907. (JGF) #26.1.177

Van Brummelen, Glen. Mathematical Methods in the Tables of Planetary Motion in Kūshyār ibn Labbān's *Jāmi' Zīj*, *Historia Mathematica* **25** (1998), 265–280. Kūshyār ibn Labbān, an Iranian scientist from 1000 years ago, composed an astronomical handbook entitled the *Jāmi' Zīj*. This paper surveys its tables of planetary motion and indicates how they were to be used. It also examines the connections between Kūshyār and al-Battānī on such tables. (DEZ) #26.1.178

Van de Griend, Pieter. *See* #26.1.175.

Van Maanen, Jan. New Maths May Profit from Old Methods, *For the Learning of Mathematics* **17** (1997), 39–43. Examples from Euler, a 17th-century Dutch text, and a manuscript from van Schooten are used to support the author's contention that bringing history, sociology, and physics into the classroom can break down artificial disciplinary boundaries in schools. (VJK) #26.1.179

Vardi, Ilan. Archimedes' Cattle Problem, *The American Mathematical Monthly* **105** (1998), 305–319. The author describes a relatively small solution to Archimedes' Cattle Problem. In the section "Historical Remarks" he concludes, "It seems very unlikely that Archimedes would have been able to solve this complete problem due to the tremendous size of the answer" (p. 317). (DEZ) #26.1.180

Von Renteln, Michael. Friedrich Prym (1841–1915)—And His Investigations on the Dirichlet Problem, in Umberto Bottazzini, ed., *Studies in the History of Modern Mathematics, II*, Palermo: Circolo Matematico di Palermo, 1996, pp. 43–55. The author draws attention to a forgotten paper (1871) by F. Prym dealing with the solution of Dirichlet boundary value problems for a disk using the Poisson integral instead of the (then undecided) assumption that a continuous function was represented by its Fourier series. See *Mathematical Reviews* **97m**:01005 and the review by Frank Smithies in *Mathematical Reviews* **98d**:01025. (TBC) #26.1.181

Von Renteln, Michael. *See also* #26.1.99 and #26.1.174.

Wall, C. T. C. *See* #26.1.89.

Weinstock, Robert. Newton's Principia and Inverse-Square Orbits in a Resisting Medium: A Spiral of Twisted Logic, *Historia Mathematica* **25** (1998), 281–289. An essay on Newton's "palpably fallacious" (p. 281) argument for two results from his *Principia*. (DEZ) #26.1.182

Weiss, Guido. *See* #26.1.24.

White, Arthur T. Fabian Stedman: The First Group Theorist? *American Mathematical Monthly* **103** (1996), 771–778. The rules of Fabian Stedman (1640–1713) for ringing of church bells in sequences of permutations are interpreted in group-theoretic language. The author suggests that group-theoretic ideas about the symmetric group of degree n were implicit in Stedman's writings, but does not suggest that Stedman was indeed a "group theorist." See the review by Peter M. Neumann in *Mathematical Reviews* **98c**:01019. (GSS) #26.1.183

Williams, Hugh Cowie. Daniel Shanks (1917–1996), *Mathematics of Computation* **66** (1997), 929–934. Short biography of Dan Shanks, with a description of his work in number theory and numerical and computational mathematics. Shanks presented his Ph.D. thesis to the University of Maryland before doing any graduate work there. See also #25.2.151 (DEZ) #26.1.184

Willmoth, Frances. Models for the Practice of Astronomy: Flamsteed, Horrocks and Tycho, in #26.1.186, pp. 49–75. As Flamsteed developed his career, his identification with Tycho Brahe as a hero and role-model dates from rather later on. At the beginning, the Northern astronomers Horrocks, Crabtree, and Gascoigne provided more immediate exemplars, though their value to Flamsteed diminished after his appointment as Director of the Royal Observatory. (JGF) #26.1.185

Willmoth, Frances, ed. *Flamsteed's Stars: New Perspectives on the Life and Work of the First Astronomer Royal, 1646–1719*, Woodbridge, Suffolk, UK: Boydell Press, 1997, 288 pp., hardbound, £45, $81. A collection of articles about John Flamsteed, who played a leading role in English astronomy for nearly half a century, from his appointment as "astronomical observator" to Charles II and first director of the new Royal Observatory at Greenwich, in 1675, through five successive reigns until his death on the last day of 1719. The essays describe Flamsteed's achievements and discuss various personal relationships. Papers by William J. Ashworth, Mordechai Feingold, Rob Iliffe, Adrian Johns, Ian G. Stewart, and Frances Willmoth are abstracted separately. (DEZ) #26.1.186

Wnuk, Witold. *See* #26.1.126.

Yoder, Joella. Review, *Isis* **88** (1997), 709–710. A synopsis of four booklets describing various aspects of the work of Christiaan Huygens that appear in the exhibition on Huygens at the Museum Boerhaave in Leiden, Holland. All of the booklets are in Dutch except Anne C. van Helden and Rob H. van Gent, "The Huygens Collection." (DEZ) #26.1.187

Zemánek, Jaroslav. *See* #26.1.166.